

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. - 55. (canceled)

56. (previously presented) A casting material for the working area of indefinite chill rolls comprising an alloy of, in wt-%,

2.0 to 3.5 carbon

1.0 to 2.0 silicon

0.5 to 2.0 manganese

1.0 to 3.0 chromium

3.5 to 4.9 nickel

0.20 to 2.9 molybdenum

0 to 0.65 aluminum and

more than 0.5 to 5.9 vanadium, provided that the vanadium may in part be replaced, in an amount of less than 0.6 wt-%, by at least one of niobium and tantalum, the remainder being iron, accompanying elements and impurities related to the manufacturing process, wherein 1.0 to 3.0 vol-% of graphite is present in the form of particles with a distribution of more than 20 and less than 100 particles per mm² of polished surface of the alloy.

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57. (previously presented) The casting material of claim 56, wherein the alloy comprises 1.8 to 4.9 wt-% of vanadium and 2.2 to 3.1 wt-% of carbon, and wherein 1.2 to 2.5 vol-% of graphite is present in the form of particles with a distribution of more than 22 and less than 90 particles per mm² of polished surface.

58. (previously presented) The casting material of claim 57, wherein the alloy comprises, in wt-%, 1.2 to 2.5 chromium, 0.5 to 2.1 molybdenum and 1.5 to 4.9 vanadium.

59. (previously presented) The casting material of claim 56, wherein a concentration ratio of carbon to silicon in the alloy is not higher than 2.6.

60. (previously presented) The casting material of claim 58, wherein a concentration ratio of carbon to silicon in the alloy is not higher than 2.0.

61. (previously presented) The casting material of claim 59, wherein the alloy comprises 2.6 to 2.95 wt-% of carbon.

62. (previously presented) The casting material of claim 61, wherein the alloy comprises 1.2 to 1.85 wt-% of silicon.

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63. (previously presented) The casting material of claim 60, wherein the alloy comprises 1.4 to 1.75 wt-% of silicon.

64. (previously presented) The casting material of claim 57, wherein the alloy comprises 0.002 to 0.65 wt-% of aluminum.

65. (previously presented) The casting material of claim 58, wherein the alloy comprises 0.005 to 0.04 wt-% of aluminum.

66. (previously presented) The casting material of claim 59, wherein the alloy comprises 3.5 to 4.7 wt-% of nickel.

67. (previously presented) The casting material of claim 60, wherein the alloy comprises 4.15 to 4.6 wt-% of nickel.

68. (previously presented) The casting material of claim 61, wherein a concentration ratio of molybdenum to chromium in the alloy is less than 1.0.

69. (previously presented) The casting material of claim 62, wherein a concentration ratio

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of molybdenum to chromium in the alloy is less than 0.8.

70. (previously presented) The casting material of claim 56, wherein the alloy comprises 1.5 to 2.01 wt-% of chromium and 0.3 to 0.9 wt-% of molybdenum.

71. (previously presented) The casting material of claim 70, wherein the alloy comprises 1.8 to 3.9 wt-% of vanadium.

72. (previously presented) The casting material of claim 65, wherein the alloy comprises 1.9 to 2.95 wt-% of vanadium.

73. (previously presented) The casting material of claim 59, wherein the material comprises 8 to 35 vol-% of eutectic carbides and 1 to 15 vol-% of carbides of at least one of vanadium, niobium and tantalum.

74. (previously presented) The casting material of claim 73, wherein the material comprises 10 to 25 vol-% of eutectic carbides.

75. (previously presented) The casting material of claim 73, wherein the material comprises

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2 to 10 vol-% of carbides of at least one of vanadium, niobium and tantalum.

76. (previously presented) A composite indefinite chill roll comprising a core part and a working or sleeve part surrounding the core part, wherein the core part is made of low-alloy cast iron and the working or sleeve part has a thickness of 10 to 150 mm and is made of a casting alloy with little tendency to adhere or weld to the rolling stock, has a Shore C hardness of 70 to 90 and comprises 1.0 to 2.5 vol-% of graphite, the latter being finely dispersed with a graphite particle count of more than 20 particles per mm² of polished surface in a metallographic section, 8 to 35 vol-% of eutectic carbides, and 1 to 20 vol-% of uniformly distributed carbides of at least one of vanadium, niobium and tantalum, with the remainder primarily composed of martensite and constituents related to impurities and the manufacturing process.

77. (previously presented) The composite indefinite chill roll of claim 76, wherein the working or sleeve part comprises 1.0 to 2.5 vol-% of graphite, the latter with a graphite particle count of at least 22 but less than 100 graphite particles per mm² of polished surface, 10 to 25 vol-% of eutectic carbides and 2 to 10 vol-% of carbides of at least one of vanadium, niobium and tantalum.

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78. (previously presented) The composite indefinite chill roll of claim 77, wherein the casting alloy of the working or sleeve part comprises, in wt-%,

2.0 to 3.5 carbon

1.0 to 2.0 silicon

0.5 to 2.0 manganese

1.0 to 3.0 chromium

3.5 to 4.9 nickel

0.20 to 2.9 molybdenum

0.002 to 0.65 aluminum and

0.5 to 5.9 vanadium, provided that the vanadium may in part be replaced,

in an amount of less than 0.6 wt-%, by at least one of niobium and tantalum, with the remainder being iron and impurities.

79. (previously presented) The composite indefinite chill roll of claim 78, wherein the casting alloy of the working or sleeve part comprises, in wt-%,

2.21 to 3.1 carbon

1.2 to 1.85 silicon

0.6 to 1.6 manganese

3.5 to 4.7 nickel

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| | |
|--------------|--------------|
| 0.005 to 0.1 | aluminum and |
| 1.8 to 3.9 | vanadium. |

80. (previously presented) The composite indefinite chill roll of claim 79, wherein the casting alloy of the working or sleeve part comprises, in wt-%,

| | |
|---------------|--------------|
| 2.6 to 2.95 | carbon |
| 1.4 to 1.75 | silicon |
| 0.7 to 1.4 | manganese |
| 1.5 to 2.01 | chromium |
| 4.15 to 4.6 | nickel |
| 0.3 to 0.9 | molybdenum |
| 0.005 to 0.04 | aluminum and |
| 1.9 to 2.9 | vanadium. |

81. (previously presented) The composite indefinite chill roll of claim 78, wherein the casting alloy of the working or sleeve part comprises 3.1 to 3.9 wt-% of vanadium.

82. (previously presented) The composite indefinite chill roll of claim 81, wherein the casting alloy of the working or sleeve part comprises 3.3 to 3.75 wt-% of vanadium.

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83. (previously presented) The composite indefinite chill roll of claim 76, wherein the core part is made of ductile iron.

84. (previously presented) The composite indefinite chill roll of claim 83, wherein a binding zone between the working or sleeve part and the core part has, in the radial direction, a bending strength (3-point bending test) of greater than 600 N/mm².

85. (new) A casting material for the working area of indefinite chill rolls comprising an alloy of, in wt-%,

| | |
|---------------|--------------|
| 2.0 to 3.5 | carbon |
| 1.0 to 2.0 | silicon |
| 0.5 to 2.0 | manganese |
| 1.0 to 3.0 | chromium |
| 3.5 to 4.9 | nickel |
| 0.20 to 2.9 | molybdenum |
| 0.002 to 0.65 | aluminum and |

more than 0.5 to 5.9 vanadium, provided that the vanadium may in part be replaced, in an amount of less than 0.6 wt-%, by at least one of niobium and tantalum, the remainder being iron, accompanying elements and impurities related to the manufacturing process,

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wherein 1.0 to 3.0 vol-% of graphite is present in the form of particles with a distribution of more than 20 and less than 100 particles per mm² of polished surface of the alloy.

86. (new) The casting material of claim 85, wherein the alloy comprises 1.8 to 4.9 wt-% of vanadium and 2.2 to 3.1 wt-% of carbon, and wherein 1.2 to 2.5 vol-% of graphite is present in the form of particles with a distribution of more than 22 and less than 90 particles per mm² of polished surface.

87. (new) The casting material of claim 86, wherein the alloy comprises, in wt-%, 1.2 to 2.5 chromium, 0.5 to 2.1 molybdenum and 1.5 to 4.9 vanadium.

88. (new) The casting material of claim 85, wherein a concentration ratio of carbon to silicon in the alloy is not higher than 2.6.

89. (new) The casting material of claim 86, wherein a concentration ratio of carbon to silicon in the alloy is not higher than 2.0.

90. (new) The casting material of claim 87, wherein the alloy comprises 2.6 to 2.95 wt-% of carbon.

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91. (new) The casting material of claim 85, wherein the alloy comprises 1.2 to 1.85 wt-% of silicon.

92. (new) The casting material of claim 90, wherein the alloy comprises 1.4 to 1.75 wt-% of silicon.

93. (new) The casting material of claim 86, wherein the alloy comprises 0.005 to 0.04 wt-% of aluminum.

94. (new) The casting material of claim 87, wherein the alloy comprises 3.5 to 4.7 wt-% of nickel.

95. (new) The casting material of claim 88, wherein the alloy comprises 4.15 to 4.6 wt-% of nickel.

96. (new) The casting material of claim 85, wherein a concentration ratio of molybdenum to chromium in the alloy is less than 1.0.

97. (new) The casting material of claim 89, wherein a concentration ratio of molybdenum

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to chromium in the alloy is less than 0.8.

98. (new) The casting material of claim 86, wherein the alloy comprises 1.5 to 2.01 wt-% of chromium and 0.3 to 0.9 wt-% of molybdenum.

99. (new) The casting material of claim 85, wherein the alloy comprises 1.8 to 3.9 wt-% of vanadium.

100. (new) The casting material of claim 95, wherein the alloy comprises 1.9 to 2.95 wt-% of vanadium.

101. (new) The casting material of claim 85, wherein the material comprises 8 to 35 vol-% of eutectic carbides and 1 to 15 vol-% of carbides of at least one of vanadium, niobium and tantalum.

102. (new) The casting material of claim 101, wherein the material comprises 10 to 25 vol-% of eutectic carbides.

103. (new) The casting material of claim 101, wherein the material comprises 2 to 10 vol-

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% of carbides of at least one of vanadium, niobium and tantalum.

104. (new) A composite indefinite chill roll comprising a core part and a working or sleeve part surrounding the core part, wherein the core part is made of low-alloy cast iron and the working or sleeve part has a thickness of 10 to 150 mm and is made of a casting alloy with little tendency to adhere or weld to the rolling stock, has a Shore C hardness of 70 to 90 and comprises 1.0 to 2.5 vol-% of graphite, the latter being finely dispersed with a graphite particle count of more than 20 particles per mm² of polished surface in a metallographic section, 8 to 35 vol-% of eutectic carbides, and 1 to 20 vol-% of uniformly distributed carbides of at least one of vanadium, niobium and tantalum, with the remainder primarily composed of martensite and constituents related to impurities and the manufacturing process, wherein said working or sleeve part comprises, in wt-%,

| | |
|---------------|--------------|
| 2.0 to 3.5 | carbon |
| 1.0 to 2.0 | silicon |
| 0.5 to 2.0 | manganese |
| 1.0 to 3.0 | chromium |
| 3.5 to 4.9 | nickel |
| 0.20 to 2.9 | molybdenum |
| 0.002 to 0.65 | aluminum and |

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0.5 to 5.9 vanadium, provided that the vanadium may in part be replaced, in an amount of less than 0.6 wt-%, by at least one of niobium and tantalum, with the remainder being iron and impurities.

105. (new) The composite indefinite chill roll of claim 104, wherein the working or sleeve part comprises 1.0 to 2.5 vol-% of graphite, the latter with a graphite particle count of at least 22 but less than 100 graphite particles per mm² of polished surface, 10 to 25 vol-% of eutectic carbides and 2 to 10 vol-% of carbides of at least one of vanadium, niobium and tantalum.

106. (new) The composite indefinite chill roll of claim 105, wherein the casting alloy of the working or sleeve part comprises, in wt-%,

| | |
|--------------|--------------|
| 2.21 to 3.1 | carbon |
| 1.2 to 1.85 | silicon |
| 0.6 to 1.6 | manganese |
| 3.5 to 4.7 | nickel |
| 0.005 to 0.1 | aluminum and |
| 1.8 to 3.9 | vanadium. |

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107. (new) The composite indefinite chill roll of claim 104, wherein the casting alloy of the working or sleeve part comprises, in wt-%,

| | |
|---------------|--------------|
| 2.6 to 2.95 | carbon |
| 1.4 to 1.75 | silicon |
| 0.7 to 1.4 | manganese |
| 1.5 to 2.01 | chromium |
| 4.15 to 4.6 | nickel |
| 0.3 to 0.9 | molybdenum |
| 0.005 to 0.04 | aluminum and |
| 1.9 to 2.9 | vanadium. |

108. (new) The composite indefinite chill roll of claim 105, wherein the casting alloy of the working or sleeve part comprises 3.1 to 3.9 wt-% of vanadium.

109. (new) The composite indefinite chill roll of claim 106, wherein the casting alloy of the working or sleeve part comprises 3.3 to 3.75 wt-% of vanadium.

110. (new) The composite indefinite chill roll of claim 104, wherein the core part is made of ductile iron.

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111. (new) The composite indefinite chill roll of claim 83, wherein a binding zone between the working or sleeve part and the core part has, in the radial direction, a bending strength (3-point bending test) of greater than 600 N/mm².